CHAPTER 5:
Hazardous Waste Management

Introduction to Hazardous Waste

The **RESOURCE CONSERVATION AND RECOVERY ACT** (RCRA) is the federal law that tracks hazardous waste from cradle-to-grave. Under RCRA, hazardous waste is regulated from the point it is generated (the cradle) through its ultimate point of disposal (the grave). This law and its implementing regulations define hazardous waste, and specifies labeling, storage, treatment, disposal and reporting requirements for these wastes. RCRA regulations generally require that printers document the amount and type of wastes they ship and where it is treated or disposed.

Typical Printer Wastes

Typical printer wastes that may be considered hazardous include waste ink, waste solvent, waste oil, spent fixer, processed developer, and solid wastes such as soiled absorbent socks (commonly referred to as "PIGs"). Depending on the characteristics of the waste, the waste may be considered "hazardous". Regardless, the waste must be managed to prevent its release into the environment.

Obtaining an EPA Identification Number

Any printing facility that generates **any** hazardous waste must obtain an EPA Identification Number. An EPA identification number is unique to each printing facility. If you have additional print shops at various locations, every facility will need its own identification number. This number will appear on the "cradle to grave" paperwork required with each shipment of hazardous waste. Contact the NH DES Waste Management Division at 603-271-2900 if your facility does not have an EPA Identification Number.

What Wastes are Considered Hazardous

A waste is **hazardous** if it:

- exhibits hazardous characteristics (defined below) OR
- is listed in the regulations (See Appendix C).

Characteristic Hazardous Wastes are wastes that have any of these hazardous characteristics:

- **Ignitable --** Easily catches fire; flashpoint is below 140 ^{O} F. (See your MSDS.) **An example is isopropyl alcohol.** The waste code for ignitable waste is "D001."
- **Corrosive --** Aqueous liquids (liquids containing water) that easily corrode materials (e.g., metal drums) or human tissue and have a pH of less than or equal to 2 or greater than or equal to 12.5. **An example is battery acid (ph< 2) or sodium hydroxide (pH>12.5).** The waste code for corrosive waste is "D002."

- ⇨ **Reactive --** Potentially explosive or produces toxic gases when mixed with water, air, or other incompatible materials. **Printers do not normally generate reactive wastes.** The waste code for reactive waste is "D003."

- ⇨ **Toxic --** If laboratory testing of a chemical extract of your waste shows specific constituents, such as cadmium, chromium, or silver, and exceeds specified levels, the waste is hazardous. **Examples may include plate processing chemicals and waste fixer.** The waste codes for toxic waste range from "D004- D0043." The waste code for silver bearing waste is "D011."

Listed Hazardous Wastes are certain wastes that EPA has designated as hazardous. Each listed waste has a waste code, beginning with the letter "U", "F", "P", or "K". Any non-hazardous materials that are contaminated with listed waste are considered hazardous waste.

Listed hazardous waste that printers may generate include:

- waste solvents ("F-Solvents" such as methylene chloride)
- unused, discarded or off-specification materials (e.g., unused methanol, "U" wastes)

Handling of Shop Towels

- Contaminated shop towels do not need to be handled as hazardous waste if:
- they bear no free liquid
- they are placed in sealed containers or bags for storage and/or transportation
- the containers or bags are labeled "contaminated wipers for laundering"
- the towels are sent to a commercial laundry facility for laundering or may be laundered on-site under certain conditions.

Case Study : Handling Shop Towels

A printing facility in Connecticut has significantly reduced its waste streams and implemented various techniques to prevent pollution. One area of concern was the cleanup process because, solvent-laden shop towels are considered hazardous waste. If there is too much solvent in the towels, they could be rejected by industrial laundry services. The company rents the shop towels through an industrial laundry and reuses them. To minimize the solvent in the towel before laundering, the facility now places the towels on a strainer in a closed container. Reusing shop towels reduces the amount of hazardous waste sent off-site and also reduces the costs of hazardous waste disposal.

Source: Feldman, Michael, Pollution Prevention: Environmental Management's Next Goal, GATFWORLD, Vol. 5, Issue 6

Handling of Fluorescent Bulbs

Fluorescent and high intensity discharge (HID) lamps contain a small quantity of mercury that may pose a hazard to human health or the environment when improperly managed. Printers are prohibited to dispose of these lamps or bulbs in the regular trash and should recycle them. See Appendix C for fluorescent bulb best management practices and a list of recycling facilities.

Handling of Waste Oil

Used oil is classified as a hazardous waste, but when recycled, it is subject to less stringent requirements. Shops that burn used oil for fuel must notify the NH DES Division of Air Resources at (603) 271-1370 as well as the NH DES Waste Management Division at (603) 271-2900.

Determining your Facility's Hazardous Waste Status

Environmental regulations require printers to determine how much hazardous waste their facility generates each calendar month. This will determine your hazardous waste status. The quantity of hazardous waste you generate may change from month to month, so in order to decide your hazardous waste status you must use the month where you generated the most waste (highest category) during normal operation. The three hazardous waste categories are as follows:

	How much HAZARDOUS WASTE do you generate per month?
☐	Up to 100 kg (220 pounds or ~27 gallons) You are a **Small Quantity Generator**
☐	Greater than 100 kg but less than 1000 kg (220 and 2,200 pounds, or ~27 and ~270 gallons) You are a **Full Quantity Generator (less than 1000 kg per month)**
☐	More than 1000 kg (2,200 pounds or ~270 gallons) You are a **Full Quantity Generator (more than 1000 kg per month)** **Call 603-271-2942 to review requirements**

Most New Hampshire printers will fall under the Small Quantity Generator or Full Quantity Generator (less than 1000 kg/month) categories.

Requirements for Small Quantity Generators

You are a Small Quantity Generator (SQG) if your facility generates the following:

- Less than 100 kg (220 lbs) per calendar month of hazardous waste; or
- Less than 1 kg (2.2 lbs) per calendar month of acute hazardous waste; or
- Less than 100 kg per calendar month of acute hazardous waste spill residue.
- Note: Printers usually do not generate acutely hazardous wastes. For a list of these wastes, see Table 4.1 in Env-Wm 402.04 (the state's hazardous waste rules).

Hazardous waste requirements for SQG's include the following:

Materials Management

✓ Accumulate no more than 1,000 kg (2,200 lbs) of hazardous waste on site.

✓ Accumulate waste in tanks or containers, such as 55-gallon drums. Key requirements for managing hazardous waste in containers include:

- label each container with the words "HAZARDOUS WASTE", mark each container with the date the waste accumulation begins, identified contents, and waste number.
- use a container made of, or lined with, a material that is compatible with the hazardous waste to be stored to prevent the waste from reacting with or corroding the container.
- keep all containers holding hazardous waste closed during storage, except when adding or removing waste.
- inspect areas where containers are stored at least weekly. Look for leaks and for deterioration caused by corrosion or other factors.
- maintain the containers in good condition. If a container leaks, put the hazardous waste in another container, or contain it in some other way that complies with EPA regulations.
- a storage container holding a hazardous waste that is incompatible with any material or waste stored nearby must be separated or protected from the other material by a dike, berm, all or other device.

Tank requirements were not included here because of their limited use by printers. However, if you accumulate waste in tanks, you should refer to 40 CFR part 265, Subpart J (Tank Systems) for a list of requirements, or call (603) 271-2942 at your state agency for assistance.

✓ There is no time limit for on-site storage. Further, you may not establish satellite accumulation areas, but may take advantage of the SQG Extended Quantity and Storage Provision (Env-WM 508.03).

Land Disposal Restrictions

✓ Most hazardous wastes may not be land disposed (placed in a landfill) unless and until they meet "treatment standards." Land disposal is a broad term under RCRA, which includes placing hazardous wastes on the land, not only to dispose it but also to store it. The Land Disposal Restrictions (LDR) program requires that the waste is treated to reduce the hazardous constituents to levels set by EPA, or that the waste is treated using a specific technology. It is the printer's responsibility to ensure that his/her waste is treated to meet LDR treatment standards if it is to be land disposed. Your Treatment, Storage and Disposal Facility (TSDF) will do this, since the printer is not allowed to treat hazardous waste.

✓ With the initial shipment of waste to each designated TSDF, send a one- time written notice to each TSDF receiving the waste, and keep a copy in your file. This notice must include information regarding whether or not wastes meet treatment standards or whether the waste is excluded by the definition of hazardous or solid waste or is otherwise exempt.

Accident Prevention

✓ Operations must be maintained and operated to minimize the possibility of a fire, explosion or other accident involving hazardous waste or hazardous waste constituents. All printers who are SQGs must be equipped with:

Portable fire extinguishers, fire control devices (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control materials, and decontamination supplies.

Responding to Emergencies

✓ Have at least one employee either on the premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility of coordinating all emergency response measures. This employee is the emergency coordinator.

✓ Post the following information next to the telephone:
- a name and telephone number of the emergency coordinator;
- the location of fire extinguishers and spill control material, and, if present, fire alarm; and
- the telephone number of the fire department, unless the facility has a direct alarm

✓ The emergency coordinator or his designee must respond to any emergencies that arise. The applicable responses are as follows:
- In the event of a fire, call the fire department or attempt to extinguish the fire using a fire extinguisher.
- In the event of a spill, contain the flow of hazardous waste to the extent possible, and as soon as is practicable, clean up the hazardous waste and any contaminated materials and soil.
- In the event of a fire, explosion, or other release which could threaten human health outside the facility, or when the printer has knowledge that a spill has reached surface water, the printer must immediately notify the National Response Center using their 24-hour toll free number, (800) 424-8802.
- The report must include the following information:
  - the name, address and US EPA Identification number of the printer;
  - date, time, and type of incident (e.g., spill or fire);
  - quantity and type of hazardous waste involved in the incident
  - extent of injuries, if any; and
  - estimated quantity and disposition of recovered materials, if any.

SQGs are not required to develop a written contingency plan unless more than 100 kg of hazardous waste is stored on-site. In case of fire, explosion, or release of hazardous waste, having such a plan would provide an organized and coordinated course of action.

Personnel Training

✓ Although personnel training is not legally required unless the total quantity of hazardous waste on-site is more than 100 kg (approximately ½ a 55-gallon drum), individuals working with hazardous waste should be trained how to properly handle these waste to ensure their safety and to ensure the wastes are safely and properly managed.

✓ Ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relevant to their responsibilities during normal facility operations and emergencies.

Pre-Transport and Transport Requirements

- ✓ You may self-transport no more than 55 gallons of hazardous waste to a permitted hazardous waste transfer, treatment, storage, or disposal facility in accordance with Env-Wm 601.02 (b).

- ✓ The waste must be transported in full, sealed, and labeled containers that are compatible with the waste generated.

- ✓ If you're sending your waste off site, send your waste only to a facility permitted to handle the waste. Check with the NHDES Waste Management Division to be sure the facility you select has all necessary permits.

- ✓ When shipping waste off-site, package, label, and mark your shipment, and placard the vehicle in which your waste is shipped as specified in DOT regulations. Most printers probably use a commercial transporter to ship hazardous waste. These transporters can advise you on specific requirements for placarding, labeling, marking, and packaging. However, you remain responsible for compliance. For additional information, call the DOT hazardous materials information line at (202) 366-4488.

- ✓ Prepare a hazardous waste manifest to accompany your shipment. A hazardous waste manifest is a multi-part form designed to track hazardous waste from generation to disposal. This form will help you track your waste during shipment and make sure it arrives at the proper destination. SQGs that have a contractual agreement with a waste reclaimer that specifies the types and frequencies of shipments do not need to manifest the wastes if they retain a copy of the agreement and the vehicle used to transport the waste is owned and operated by the waste reclaimer. Obtain a manifest form from the NH DES Waste Management Division.

- ✓ Fill in all parts of the manifest including your hazardous identification number. The transporter signs the completed manifest when the shipment is accepted for transport. The facility operator at the designated TSDF also signs the form when the shipment is received and sends a copy back to the generator. You must keep this copy on file for three years.

Reporting

- ✓ If you do not receive a copy of the manifest from the receiving facility within 30 days of shipment, you are required to contact the transporter and/or treatment, storage, and disposal facility to determine its status, and to submit an exception report within 45 days to NH DES.

- ✓ You are required to maintain uniform hazardous waste manifests, copies of Notification of Intent to generate hazardous waste forms, and weekly storage container inspection records for 3 years.

Waste Minimization Certification

- ✓ Certify on your Hazardous Waste Manifest, under Item 16, that a good faith effort has been made to minimize waste generation and you have selected the best waste management method that is available and that you can afford.

Record Keeping

- ✓ You are required to maintain uniform hazardous waste manifests, copies of Notification of Intent reports, and weekly storage container inspection records for 3 years.

- ✓ New Hampshire state summary report is due on an annual basis.

- ✓ If your facility generates more than 300 kg of hazardous waste within 3 calendar months, you must submit quarterly reports to the NH DES.

STOP: IF YOU ARE A SQG, GO TO CHAPTER 6

Requirements for Full Quantity Generators

(<1000kg per month)

- You are a Full Quantity Generator (FQG) if your facility generates the following:
- More than 100 kg (220 lbs) per calendar month of hazardous waste; or
- More than 1 kg (2.2 lbs) per calendar month of acute hazardous waste.
  Note: Printers usually do not generate acutely hazardous wastes. For a list of these wastes, see Table 4.1 in Env-Wm 402.04 (the state's hazardous waste rules).

Hazardous waste regulations for FQG's include the following:

Materials Management

✓ Accumulate waste in tanks or containers, such as 55-gallon drums. Key requirements for managing hazardous waste in containers include:

- label each container with the words "HAZARDOUS WASTE", mark each container with the date the waste accumulation begins, identified contents, and waste number.
- use a container made of, or lined with, a material that is compatible with the hazardous waste to be stored (to prevent the waste from reacting with or corroding the container).
- keep all containers holding hazardous waste closed during storage, except when adding or removing waste.
- inspect areas where containers are stored at least weekly. Look for leaks and for deterioration caused by corrosion or other factors.
- maintain the containers in good condition. If a container leaks, put the hazardous waste in another container, or contain it in some other way that complies with EPA regulations.
- special standards must be met for ignitable and incompatible waste.
- a storage container holding a hazardous waste that is incompatible with any material or waste stored nearby must be separated or protected from the other material by a dike, berm, wall or other device.
- manage hazardous waste in containers according to air emission standards for process vents; equipment leaks; and tanks, surface impoundments and containers. (CFR part 265, subpart AA, BB, and CC).

- containment systems must be used if hazardous waste is stored near manholes or functional floor drains.

(Requirements for tanks, drip pads and containment buildings were not included here because of their very limited use by printers. However, if you accumulate waste in tanks or have drip pads or containment buildings, you should refer to 40 CFR part 265, Subpart J, W and/or DD, respectively, for a list of requirements, or call (603)271-2942 at your state agency for assistance.)

✓ There is no maximum weight limit for on-site accumulation. A printer who accumulates hazardous waste on-site for more than 90 days is an operator of a storage facility and is subject to the requirements of 40 CFR parts 264 and 265 and the permit requirements of 40 CR 270, unless they have been granted an extension to the 90 day period. Such an extension may be granted by EPA if hazardous wastes must remain on site for longer than 90 days because of unforeseen, temporary and uncontrollable circumstances. An extension of up to 30 days may be granted by the EPA Administrator on a case-by-case basis. For FQGs that store hazardous waste at or near the point of generation, the satellite storage provisions (Env-Wm 509.03) may apply.

Land Disposal Restrictions

✓ Most hazardous wastes may not be land disposed unless and until they meet "treatment standards." Land disposal is a broad term under RCRA, which includes placing hazardous wastes on the land, not only to dispose it but also to store it. The Land Disposal Restrictions (LDR) program requires that the waste is treated to reduce the hazardous constituents to levels set by EPA, or that the waste is treated using a specific technology. It is the printer's responsibility to ensure that his/her waste is treated to meet LDR treatment standards if it is to be land disposed. Most printers will probably have their designated TSDF do this treatment. However, if a printer chooses to treat the waste him/herself, there are additional requirements, including waste analysis plans, notifications, and certifications (Call the RCRA Hotline, your state agency, or EPA regional office.) In this instance, the printer would be operating as a TSDF, which requires extensive permitting and is NOT a good idea.

✓ With the initial shipment of waste to each designated TSDF, send a one-time written notice to each TSDF receiving the waste, and keep a copy in your files. This notice must include information regarding whether or not wastes meet treatment standards or whether the waste is excluded by the definition of hazardous or solid waste or is otherwise exempt.

Accident Prevention

✓ Be maintained and operated to minimize the possibility of a fire, explosion or other accident involving hazardous waste or hazardous waste constituents. All printers who are FQGs must be equipped with:
- an internal communication or alarm system capable of providing immediate emergency instruction (voice or signal) to all personnel;
- a device, such as a telephone (immediately available at the scene of operations) or a hand-held, two-way radio, capable of summoning emergency assistance from local police and fire departments or emergency response teams;
- portable fire extinguishers, fire control devices (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control materials, and decontamination supplies; and
- water at adequate volume and pressure to supply water hose streams, foam-producing equipment, automatic sprinklers, or water spray systems.

- ✓ **You Also Must:**
  - test and maintain all equipment to ensure proper operation;
  - allow sufficient aisle space to permit the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation;
  - attempt to secure arrangements with fire departments, police, emergency response teams, equipment suppliers, and local hospitals, as appropriate, to provide services in the event of an emergency; and
  - ensure that personnel handling hazardous waste have immediate access to an alarm or emergency communications device.

Responding to Emergencies:

- ✓ Have at least one employee either on the premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility of coordinating all emergency response measures. This employee is the emergency coordinator.

- ✓ Post the following information next to the telephone:
  - a name and telephone number of the emergency coordinator;
  - the location of fire extinguishers and spill control material, and, if present, fire alarm; and
  - the telephone number of the fire department, unless the facility has a direct alarm

- ✓ The emergency coordinator or his designee must respond to any emergencies that arise. The applicable responses are as follows:
  - In the event of a fire, call the fire department or attempt to extinguish the fire using a fire extinguisher.
  - In the event of a spill, contain the flow of hazardous waste to the extent possible, and as soon as is practicable, clean up the hazardous waste and any contaminated materials and soil.
  - In the event of a fire, explosion, or other release which could threaten human health outside the facility, or when the printer has knowledge that a spill has reached surface water, the printer must immediately notify the National Response Center using their 24-hour toll free number, (800) 424-8802. The report must include the following information:
    - the name, address and US EPA Identification number of the printer;
    - date, time, and type of incident (e.g., spill or fire);
    - quantity and type of hazardous waste involved in the incident
    - extent of injuries, if any; and
    - estimated quantity and disposition of recovered materials, if any.

- ✓ Have a contingency plan designed to minimize hazards from fires, explosions, or any unplanned release of hazardous waste or constituents. A contingency plan usually answers a set of "what if" questions. For example:
  - What if there is a fire in the area where hazardous waste is stored?
  - What if I spill hazardous waste, or one of my hazardous waste containers leaks? A copy of the plan must be kept on site and an additional copy must be submitted to all state and local emergency services providers. FQGs must have an emergency coordinator on site or on call at all times to respond to emergencies.

- ✓ A copy of the contingency plan must be kept on site and submitted to all local police and fire departments, hospitals, and emergency response teams that may be called upon to provide emergency services.

Personnel Training

- ✓ provide training for facility personnel. This must include instruction in hazardous waste management procedures and emergency response. The training must be completed within 6 months from the start of their employment. The facility personnel must undertake an annual review of initial training.

Pre-Transport and Transport Requirements

- ✓ If you're sending your waste off site, send your waste only to a facility permitted to handle the waste. Check with NHDES Hazardous Waste Compliance Section at (603) 271-2942 to be sure the facility you select has all necessary permits.

- ✓ When shipping waste off-site, package, label, and mark your shipment, and placard the vehicle in which your waste is shipped as specified in DOT regulations. Most printers probably use a commercial transporter to ship hazardous waste. These transporters can advise you on specific requirements for placarding, labeling, marking, and packaging. However, you remain responsible for compliance. For additional information, call the DOT hazardous materials information line at (202) 366-4488.

- ✓ Prepare a hazardous waste manifest to accompany your shipment. A hazardous waste manifest is a multi-part form designed to track hazardous waste from generation to disposal. This form will help you track your waste during shipment and make sure it arrives at the proper destination. Obtain a manifest form from NHDES Reporting at (603) 271-2900.

- ✓ Fill in all parts of the manifest. The transporter signs the completed manifest when the shipment is accepted for transport. The facility operator at the designated TSDF also signs the form when the shipment is received and sends a copy back to the generator. You must keep this copy on file for three years.

Reporting

- ✓ If you do not receive a copy of the manifest from the receiving facility within 30 days of shipment, you are required as an FQG to contact the transporter and/or treatment, storage, and disposal facility to determine its status, and to submit an exception report within 45 days to NH DES.

- ✓ You are required to maintain uniform hazardous waste manifests, copies of Notification of Intent reports, and weekly storage container inspection records for 3 years.

- ✓ If your facility generates more than 300 kg of hazardous waste within 3 calendar months, you must submit quarterly reports to the NH DES.

Waste Minimization Certification

- ✓ Certify on your Hazardous Waste Manifest Form that you have a program in place to reduce the volume and toxicity of waste generated to the degree that it is determined to be economically practicable, and that you have selected a currently available method of treatment, storage, or disposal which minimizes the present and future threat to human health and the environment.

Record Keeping

- ✓ Keep records of test results, waste analyses and other hazardous waste determinations for at least 3 years.
- ✓ Keep personnel training records until the facility closes.
- ✓ Keep copies of your biennial report for at least 3 years.
- ✓ Keep copies of Exception Reports for at least 3 years.
- ✓ Keep your copy of the signed manifest for at least three years. If you have the copy that was signed and returned from the TSDF, retain that one instead for at least three years.

STOP: IF YOU ARE A
FULL QUANTITY GENERATOR
THAT GENERATES LESS THAN 1000 KG PER MONTH:

GO TO CHAPTER 6

Requirements for FQGs, > 1000 Kg/month

Contact the NHDES Hazardous Waste Compliance Section at (603) 271-2942 to review the additional requirements for this hazardous waste generator category.